

# MECHANICS' MAGAZINE,

## A N D

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[MONTHLY, 54.]

#### PRECIOUS STONES.

[Continued from page 343.]

##### EMERALD.

The emerald is a well known gem of pure green color. By the ancients it was in great request, particularly for engraving upon. They are said to have procured it from Ethiopia and Egypt. The most intensely colored and valuable emeralds that we are acquainted with are brought from Peru.

The emerald is one of the softest of the precious stones; and is almost exclusively indebted for its value to its charming color. The brilliant purple of the ruby, the golden yellow of the topaz, the celestial blue of the sapphire, are all pleasing tints; but the green of the emerald is so lovely, that the eye, after glancing over all the others, finds delight in resting upon this.

The largest emerald that has been mentioned, is one said to have been possessed by the inhabitants of the Valley of Manta in Peru, at the time when the Spaniards first arrived there. It is recorded to have been as big as an ostrich's egg, and to have been worshipped by the Peruvians, under the name of the Goddess, or Mother of Emeralds. They brought smaller ones as offerings to it, which the priests distinguished by the appellation of daughters. Many fine emeralds are stated to have been formerly bequeathed to different monasteries on the continent; but the greater part of them are said to have been sold by the monks, and to have had their place supplied with colored glass imitations. These stones are seldom seen of large size, and at the same time entirely free from flaws.

The emerald, if heated to a certain degree, assumes a blue color; but it recovers its own proper tint when cold. When the heat is carried much beyond this, it melts into an opaque colored mass.

##### AQUA MARINE.

The beryl, or aqua marine, is a light or mountain green variety of the emerald,

sometimes straw colored, bluish, yellow, or even white.

These stones are of such frequent occurrence, even in large pieces, perfectly clear and free from flaws, and in general so soft, and have so little the brilliancy of other gems, that they are generally considered of very inferior value. The most beautiful kinds are brought from Dauria, on the frontiers of China, from Siberia, and from Brazil.

##### TOURMALINE.

The tourmaline is a stone belonging to the same family as the emerald, and generally of a smoky blackish color, though it is sometimes green, red, blue, or brown.—When not very thick, it is transparent.

This stone was first made known in Europe about the beginning of the last century, by the Dutch merchants, who brought it from the island of Ceylon, where it is principally found. When strongly heated, it becomes electric; one of the summits of the crystal negatively, and the other positively. An early writer by whom it is mentioned, says that "it has the property not only of attracting ashes from the warm or burning coals, but that it also repels them again, which is very amusing: for as soon as a small quantity of ashes leap upon it, and appears as if endeavoring to writhe themselves by force into the stone, they in a little time spring from it again, as if to make a new attempt. It was on this account that the Dutch called it the ashes drawer."

When laid on the table, the tourmaline appears dark and opaque; but when held against the light, it has generally a pale brownish hue. It is sometimes cut, polished and worn as a gem; but on account of the muddiness of its colors, is not in general much esteemed. Those persons who wear tourmalines set in rings, consider them more as objects of curiosity than of elegance: they show them as small electrical instruments, which it is only necessary to expose for a little while to the heat of a fire, to make them attract and repel light bodies, to

the amusement of all who are unacquainted with their qualities.

#### CORNELIAN.

Cornelian is another kind of agate, usually of a red or flesh color, though sometimes white, orange or yellow.

On several of the British shores, cornelians are found with other pebbles; but the most beautiful and valuable kinds are imported from the East Indies. These are sometimes so large as to measure nearly three inches in diameter. The kinds principally in request are those of pure white and bright red color; and jewellers have the art of changing the color of the yellow varieties to red, by heat.

No stone is so much in request for seals, as the cornelian: it is likewise cut into beads for necklaces, and stones for ear-rings; into crosses, bracelets, and other trinkets, which in India form a considerable branch of traffic.

#### ONYX.

Onyx is a kind of agate, marked alternately with white and black, or white and brown. Its name is derived from the Greek language, and has been given on account of its resemblance in color to the whitish band at the base of the human nail. The distinction which appears to be made betwixt *onyx* and *sardonyx*, arises from the colors of the former being arranged either concentrically, or in a somewhat confused manner, and those of the latter in regular stripes or bands.

Both these kinds are highly esteemed by lapidaries, for the formation of vases, snuff-boxes, and trinkets of various kinds. Of the *sardonyx* the ancients made those beautiful cameos, many of which still ornament our cabinets.

The onyx is imported from the East Indies, Siberia, Germany, and Portugal.

#### OPALS.

Opals are a semi-transparent kind of stones, which have a milky cast, and when held betwixt the eye and the light, exhibit a changeable appearance of color.

There are in Hungary some quarries or mines from which, about four centuries ago, opals were obtained in such abundance, that upwards of three hundred persons were employed in them. These quarries still produce opals, some of which are so valuable as to pass in commerce under the appellation of *oriental opals*, whilst others are so poor as to be of no value whatever to the jew-

eller. Opals are also found in other parts of Europe, and in the island of Sumatra, and several parts of the East Indies.

Few precious stones are more beautiful than opals. Their elegant play of colors, brilliant blue, green, red and yellow, variously modified, have procured for them a distinguished rank among the gems. Notwithstanding this, they are but ill suited to the purposes of jewelry, on account of their softness, their great frangibility, and their sometimes splitting on a change of temperature. By the Turks they are so peculiarly esteemed, that a fine opal of moderate size has been sometimes sold at the price of a diamond. The esteem in which they were held among the ancients Romans was such, that Nonius, the Roman senator, is stated to have preferred banishment to parting with a favorite opal which Mark Anthony was anxious to possess.

In the abbey of St. Denys, near Paris, there was formerly a curious ancient opal, which was green on the outside, and when viewed against the light, exhibited a fine ruby color.

In the purchasing of opals, great caution is requisite, since fine glass pastes have not unfrequently been substituted for them, and sold at enormous prices.

*Hydrophane*, or *oculus mundi*, is a kind of opal, the distinguishing characteristics of which is, that it gradually becomes transparent by immersion in water. It is either of a whitish brown, yellowish, green, milky grey, or yellow color, and opaque. The name of *oculus mundi* has been given to these stones from an internal spark, or luminous spot, which changes its position according to the direction in which they are held to the light. The countries in which they are chiefly found are Hungary and Iceland.

The phenomena of their becoming transparent in water, is supposed to be occasioned by that fluid soaking through their whole substance, in the same manner as the transparency of paper is occasioned by the immersing it in oil. When taken out of the water, these stones, as they dry, become again opaque.—[Bingley's Useful Knowledge.]

From the Journal of the Franklin Institute.

#### NEW PATENT LAW.

We have now the pleasure of presenting to the public the Law for the restoration of

the Records and Models of the Patent Office, which will be found, also, to contain various provisions tending to secure the rights of bona fide inventors. For whatever there is of good in this law, and we think that there is much that is so, the public are indebted to the indefatigable exertions of the Hon. John Ruggles, of the Senate of the United States, who has devoted himself to this subject with equal zeal and success, from the inception of the bill, to its final signature by the President, at the moment before his term of office expired.

AN ACT,

In addition to the act to promote the progress of science and useful arts.

*And be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled,* That any person who may be in possession of, or in any way interested in, any patent for an invention, discovery, or improvement, issued prior to the fifteenth day of December, in the year of our Lord one thousand eight hundred and thirty-six; or in an assignment of any patent, or interest therein, executed and recorded prior to the said fifteenth day of December, may, without charge, on presentation or transmission thereof to the Commissioner of Patents, have the same recorded anew in the Patent Office, together with the descriptions, specifications of claim, and drawings annexed or belonging to the same; and it shall be the duty of the Commissioner to cause the same, or any authenticated copy of the original record, specification, or drawing which he may obtain, to be transcribed and copied into books of record to be kept for that purpose; and wherever a drawing was not originally annexed to the patent and referred to in the specification, any drawing produced as a delineation of the invention, being verified by oath in such manner as the Commissioner shall require, may be transmitted and placed on file or copied as aforesaid, together with the certificate of the oath; or such drawings may be made in the office, under the direction of the Commissioner, in conformity with the specification. And it shall be the duty of the Commissioner to take such measures as may be advised and determined by the Board of Commissioners provided for in

the fourth section of this act, to obtain the patents, specifications, and copies aforesaid, for the purpose of being so transcribed and recorded. And it shall be the duty of each of the several clerks of the Judicial Courts of the United States, to transmit, as soon as may be, to the Commissioner of the Patent Office, a statement of all the authenticated copies of patents, descriptions, specifications, and drawings of inventions and discoveries made and executed prior to the aforesaid fifteenth day of December, which may be found on the files of his office; and also to make out and transmit to said Commissioner, for record as aforesaid, a certified copy of every such patent, description, specification, or drawing, which shall be specially required by said Commissioner.

SEC. 2. *And be it further enacted,* That copies of such record and drawings, certified by the Commissioner, or, in his absence, by the chief clerk, shall be prima facie evidence of the particulars of the invention and of the patent granted therefor, in any judicial court of the United States, in all cases where copies of the original record or specifications and drawings would be evidence without proof of the loss of such originals; and no patent issued prior to the aforesaid fifteenth day of December shall after the first day of June next, be received in evidence in any of the said courts in behalf of the patentee or other person who shall be in possession of the same, unless it shall have been so recorded anew, and a drawing of the invention, if separate from the patent, verified as aforesaid, deposited in the Patent Office; nor shall any written assignment of any such patent, executed and recorded prior to the said fifteenth day of December, be received in evidence in any of the said courts in behalf of the assignee or other person in possession thereof, until it shall have been so recorded anew.

SEC. 3. *And be it further enacted,* That whenever it shall appear to the Commissioner that any patent was destroyed by the burning of the Patent Office building on the aforesaid fifteenth day of December, or was otherwise lost prior thereto, it shall be his duty, on application therefor by the patentee or other person interested therein, to issue a new patent for the same invention or discovery, bearing the date of the

original patent, with his certificate thereon that it was made and issued pursuant to the provisions of the third section of this act, and shall enter the same of record: *Provided however*, That before such patent shall be issued, the applicant therefor shall deposit in the Patent Office a duplicate, as near as may be, of the original model, drawings, and description, with specification of the invention or discovery, verified by oath, as shall be required by the Commissioner; and such patent and copies of such drawings and description, duly certified, shall be admissible as evidence in any judicial court of the United States, and shall protect the rights of the patentee, his administrators, heirs, and assigns, to the extent only in which they would have been protected by the original patent and specification.

SEC. 4. *And be it further enacted*, That it shall be the duty of the Commissioner to procure a duplicate of such of the models destroyed by fire on the aforesaid fifteenth day of December, as were most valuable and interesting, and whose preservation would be important to the public; and such as would be necessary to facilitate the just discharge of the duties imposed by law on the Commissioner in issuing patents, and to protect the rights of the public and of patentees in patented inventions and improvements: *Provided*, That a duplicate of such models may be obtained at a reasonable expense: *And provided, also*, That the whole amount of expenditure for this purpose shall not exceed the sum of one hundred thousand dollars. And there shall be a temporary board of Commissioner, to be composed of the Commissioner of the Patent Office and two other persons to be appointed by the President, whose duty it shall be to consider and determine upon the best and most judicious mode of obtaining models of suitable construction; and, also, to consider and determine what models may be procured in pursuance of, and in accordance with, the provisions and limitations in this section contained. And said commissioners may make and establish all such regulations, terms, and conditions, not inconsistent with law, as in their opinion, may be proper and necessary to carry the provisions of this section into effect, according to its true intent.

SEC. 5. *And be it further enacted*, That, whenever a patent shall be returned for correction and re-issue under the thirteenth section of the act to which this is additional, and the patentee shall desire several patents to be issued for distinct and separate parts of the thing patented, he shall first pay, in manner and in addition to the sum provided by that act, the sum of thirty dollars for each additional patent so to be issued: *Provided, however*, That no patent made prior to the aforesaid fifteenth day of December, shall be corrected and re-issued until a duplicate of the model and drawing of the thing as originally invented, verified by oath as shall be required by the Commissioner, shall be deposited in the Patent Office. Nor shall any addition of an improvement be made to any patent heretofore granted, nor any new patent be issued for an improvement made in any machine, manufacture, or process, to the original inventor, assignee, or possessor of a patent therefor, nor any disclaimer be admitted to record, until a duplicate model and drawing of the thing originally intended, verified as aforesaid, shall have been deposited in the Patent Office, if the Commissioner shall require the same; nor shall any patent be granted for an invention, improvement, or discovery, the model or drawing of which shall have been lost, until another model and drawing, if required by the Commissioner, shall, in like manner, be deposited in the Patent Office; and in all such cases, as well as in those which may arise under the third section of this act, the question of compensation for such models and drawings, shall be subject to the judgment and decision of the Commissioners provided for in the fourth section, under the same limitations and restrictions, as are therein prescribed.

SEC. 6. *And be it further enacted*, That any patent hereafter to be issued, may be made and issued to the assignee or assignees of the inventor or discoverer, the assignment thereof being first entered of record, and the application therefor being duly made, and the specification duly sworn to by the inventor. And in all cases hereafter, the applicant for a patent shall be held to furnish duplicate drawings, whenever the case admits of drawings, one of which to be deposited in the office, and the other to

be annexed to the patent, and considered a part of the specification.

SEC. 7. *And be it further enacted*, That, whenever any patentee shall have, through inadvertence, accident or mistake, made his specification of claim too broad, claiming more than that of which he was the original or first inventor, some material and substantial part of the thing patented being truly and justly his own, any such patentee, his administrators, executors, and assigns, whether of the whole or of a sectional interest therein, may make disclaimer of such parts of the thing patented, as the disclaimant shall not claim to hold by virtue of the patent or assignment, stating therein the extent of his interest in such patent; which disclaimer shall be in writing, attested by one or more witnesses, and recorded in the Patent Office, on payment by the person disclaiming, in manner as other patent duties are required by law to be paid, of the sum of ten dollars. And such disclaimer shall thereafter be taken and considered as a part of the original specification, to the extent of the interest which shall be possessed in the patent or right secured thereby, by the disclaimant, and by those claiming by or under him subsequent to the record thereof. But no such disclaimer shall affect any action pending at the time of its being filed, except so far as may relate to the question of unreasonable neglect or delay in filing the same.

SEC. 8. *And be it further enacted*, That, whenever application shall be made to the Commissioner for any addition of a newly discovered improvement to be made to an existing patent, or whenever a patent shall be returned for correction and re-issue, the specification of claim annexed to every such patent shall be subject to revision and restriction, in the same manner as are original applications for patents; the Commissioner shall not add any such improvement to the patent in one case, nor grant the re-issue in the other case, until the applicant shall have entered a disclaimer, or altered his specification of claim in accordance with the decision of the Commissioner; and in all such cases, the applicant if dissatisfied with such decision, shall have the same remedy and be entitled to the benefit of the same privileges and proceedings as are provided applications original case of by law in the for patents.

SEC. 9. *And be it further enacted*, Any thing in the fifteenth section of the act of which this is additional to the contrary notwithstanding, That, whenever by mistake, accident, or inadvertence, and without any wilful default or intent to defraud or mislead the public, any patentee shall have in his specification claimed to be the original and first inventor or discoverer of any material or substantial part of the thing patented, of which he was not the first and original inventor, and shall have no legal or just right to claim the same, in every such case the patent shall be deemed good and valid for so much of the invention or discovery as shall be truly and bona fide his own, provided it shall be a material and substantial part of the thing patented, and be definitely distinguishable from the other parts so claimed without right as aforesaid. And every such patentee, his executors, administrators, and assigns, whether of a whole or a sectional interest therein, shall be entitled to maintain a suit at law or in equity on such patent for any infringement of such part of the invention or discovery as shall be bona fide his own as aforesaid, notwithstanding the specification may embrace more than he shall have any legal right to claim. But, in every such case in which a judgment or verdict shall be rendered for the plaintiff, he shall not be entitled to recover costs against the defendant, unless he shall have entered at the Patent Office, prior to the commencement of the suit, a disclaimer of all that part of the thing patented which was so claimed without right: *Provided, however*, That no person bringing any such suit shall be entitled to the benefits of the provisions contained in this section who shall have unreasonably neglected or delayed to enter at the Patent Office, a disclaimer as aforesaid.

SEC. 10. *And be it further enacted*, That the Commissioner is hereby authorized and empowered to appoint agents in not exceeding twenty of the principal cities or towns in the United States, as may best accommodate the different sections of the country, for the purpose of receiving and forwarding to the Patent Office all such models, specimens of ingredients and manufactures, as shall be intended to be patented or deposited therein, the transportation of the same to be chargeable to the patent fund.

SEC. 11. *And be it further enacted*,

That, instead of one examining clerk, as provided by the second section of the act to which this is additional, there shall be appointed, in manner therein provided, two examining clerks, each to receive an annual salary of fifteen hundred dollars; and also an additional copying clerk, at an annual salary of eight hundred dollars. And the Commissioner is also authorized to employ, from time to time, as many temporary clerks as may be necessary to execute the copying and draughting required by the first section of this act, and to examine and compare the records with the originals, who shall receive not exceeding seven cents for every page of one hundred words, and for drawings, and comparison of records with originals, such reasonable compensation as shall be agreed upon or prescribed by the Commissioner.

SEC. 12. *And be it further enacted*, That, whenever the application of any foreigner for a patent shall be rejected and withdrawn for want of novelty in the invention, pursuant to the seventh section of the act to which this is additional, the certificate thereof of the Commissioner shall be a sufficient warrant to the Treasurer to pay back to such applicant two-thirds of the duty he shall have paid into the Treasury on account of such application.

SEC. 13. *And be it further enacted*, That, in all cases in which an oath is required by this act, or by the act to which this is additional, if the person of whom it is required shall be conscientiously scrupulous of taking an oath, affirmation may be substituted therefor.

SEC. 14. *And be it further enacted*, That all monies paid into the Treasury of the United States for patents and for fees for copies furnished by the Superintendent of the Patent Office prior to the passage of the act to which this is additional, shall be carried to the credit of the patent fund created by said act; and the monies constituting said fund shall be, and the same are hereby, appropriated for the payment of the salaries of the officers and clerks provided for by said act, and all other expenses of the Patent Office, including all the expenditures provided for by this act; and also, for such other purposes as are or may be hereafter specially provided for by law. And the Commissioner is hereby au-

thorized to draw upon said fund, from time to time, for such sums as shall be necessary to carry into effect the provisions of this act, governed, however, by the several limitations herein contained. And it shall be his duty to lay before Congress, in the month of January, annually, a detailed statement of the expenditures and payments by him made from said fund.

And it shall also be his duty to lay before Congress, in the month of January, annually, a list of all patents which shall have been granted during the preceding year, designating, under proper heads, the subjects of such patents, and furnishing an alphabetical list of the patentees, with their places of residence; and he shall also furnish a list of all patents which shall have become public property during the same period; together with such other information of the state and condition of the Patent Office, as may be useful to Congress or to the Public.

Approved, March 3d. 1837.

GALVANISM.—Dr. Charles G. Page, of Salem, Mass., has lately made the valuable discovery that iron, lead, or any metal, may be substituted for the expensive article of copper in galvanic batteries, whereby the cost of this apparatus will be diminished by about one-half. In order that a battery of this construction should equal one of copper and zinc, it is necessary that the exciting liquid should be some acid, holding the oxide of copper in solution, such as the nitrate or sulphate of copper. A solution of blue vitriol or the sulphate of copper, is preferable from its cheapness. A small plate of lead and zinc, each the size of a cent, immersed in a wine glass of the above solution, will give bright sparks, strong shocks, and produce decompositions when connected with a spiral coil of copper ribbon three hundred and twenty feet long, which is, for convenience, now generally called a dynamic multiplier. The superior action of such batteries appears to be owing to the greater readiness with which copper deposits upon another metal than itself. He has further found that a tolerably good battery may be made of one metal only, viz. zinc, provided one of the plates much exceeds the other in size, and the sulphate of copper be used as the exciting liquid. To construct a battery of this description, a number of narrow strips of

sheet zinc, arranged in the form of a cylinder, are immersed in a cylinder of zinc containing a solution of the sulphate or nitrate of copper; the zinc strips answering merely for conductors.

Among other discoveries lately made by Dr. Page in relation to this subject, we notice the production of sparks and shocks from a thermo-electric apparatus, consisting of a pair of bismuth and antimony plates heated by a spirit lamp. This condition has hitherto been wanting to establish fully the identity of thermo-electric, with common galvanic currents.

GAUDALOUPE.—It appears that the volcano on the island of Gaudaloupe, is just now in a state of great activity, which has been preceded by ten years of earthquakes, and ejection of lava and volcanic cinders. The eruption began on the 3d of December, at 2 o'clock in the afternoon, with a noise like that of a torrent falling over high rocks. The usual accompaniments attended it, and several mouths or cracks are opened, from one of which have issued fragments of rock, weighing from forty to fifty pounds.—[Athenaeum.]

#### TRANSACTIONS OF THE INSTITUTION OF CIVIL ENGINEERS.

#### XXII. AN ABSTRACT ACCOUNT OF COALS USED IN COKE OVENS AND RETORTS, AND COKE PRODUCED FROM ONE YEAR'S WORK AT THE IPSWICH GAS WORKS. COMMUNICATED BY WM. CUBITT, ESQ., F. R. S., & C. V. P. INST. C. E.

The coke ovens from which the following statement is made are worked with a daily charge of 20 bushels of coals, which are burned off in 24 hours.

Each oven, by means of its spare heat, keeps at a constant working state 6 retorts for making coal gas, which retorts are charged with 10 bushels of coals three times per day in a general way.

1825.	Coals used in Ovens.		Coke produced.		Coals used in Retorts.		Coke produced.	
	Ch.	Bu.	Ch.	Bu.	Ch.	Bu.	Ch.	Bu.
January,	31	32	36	9	37	18	55	16
February,	28	20	29	27	27	18	40	34
March,	27	10	31	15	25	0	37	4
April,	16	24	19	7	16	18	24	15
May,	15	15	17	35	7	24	11	16½
June,	15	6	17	24	6	0	5	32½
July,	15	18	18	1	7	6	10	27
August,	24	4	28	0	8	17	12	22
September,	30	0	34	29	27	0	39	16
October,	33	4	38	22	30	20	45	25
November,	34	18	40	18	35	2	51	32
December,	41	4	46	6	45	20	70	0
	313	11	358	13	273	35	405	24

#### EXPERIMENTS TO SHOW THE WEIGHT OF COKE PRODUCED FROM BOTH COKE OVENS AND RETORTS WITH A GIVEN WEIGHT OF COALS.

COKE OVEN EXPERIMENTS.	Measure of Coals.		Weight of Coals.		Weight of Cinders.		Measure of Cinders.	
	Ch.	Bu.	Cwt.	qrs. lbs.	Cwt.	qrs. lbs.	Ch.	Bu.
1st Experiment in Ovens with TM coals	0	20	13	3 11½	8	0 22	0	22½
2d ditto ditto with sme coals	0	20	13	2 18	8	0 20	0	22½
RETORT EXPERIMENTS.								
1st experiment in 6 Retorts with small coals,	0	10	6	0 0	4	3 5	0	12
2d ditto in 6 Retorts with TM coals	0	10	6	2 15	4	3 20	0	14

The coke produced from the ovens is the best possible quality for iron founders and maltsters, and is sold at 28s. per chaldron of 36 bushels.

The coke produced from the retorts is used by some persons for drying malt, but

principally for common fires, and is sold at 21s per chaldron.

The coals which are found to yield the greatest heat in converting into coke in the ovens, and at the same time leaving the best

coke, are *Pit's Tanfield Moor*, fitted only by H. Clayton, of Newcastle.

The waste heat from these coke ovens keeps the retorts at a constant red heat through an entire coating of fire-bricks, varying from 8 to 3 inches in thickness, according to the distance from the end of the coke oven.

**XXIII. REMARKS ON HERM GRANITE, BY FREDERICK C. LUKIS, ESQ., OF GUERNSEY, IN REPLY TO ENQUIRIES FROM THE PRESIDENT; WITH SOME EXPERIMENTS MADE BY THE LATTER ON THE WEAR OF DIFFERENT GRANITES. COMMUNICATED BY THE PRESIDENT.**

ALSO, EXPERIMENTS ON THE FORCE REQUIRED TO FRACTURE AND CRUSH STONES; MADE UNDER THE DIRECTION OF MESSRS. BRAMAH AND SONS, FOR B. WYATT, ESQ., ARCHITECT. COMMUNICATED BY MR. WM. FREEMAN, A. INST. C. E.

**1. OF THE DURABILITY OF HERM STONE FOR BUILDINGS EXPOSED TO AIR?**

The Herm granite (sienite) as compared with Peterhead and Moorstone from Devon to Cornwall, is a highly crystallized intermixture of felspar, quartz, and hornblende, with a small quantity of black mica; the first of these ingredients hard and sometimes transparent in a greater degree than that found in other British granites,—the contact of the other substances perfect. It resists the effect of exposure to air, and does not easily disintegrate from the mass when mica does not prevail, but as this last is usually scarce in Guernsey granites, the mass is not deteriorated by its presence as in the Brittany granites, where it abounds, decomposes, stains, and pervades the felspar, and finally destroys the adhesion of the component parts:—*vide* the interior columns of St. Peter's Port church, which is built of it for an instance. The quartz is in a smaller quantity, and somewhat darker than the felspar in colour; the grains are not large, but uniformly mixed with the other ingredients. The hornblende, which appears to supply the place of mica, is hard and crystalized in small prisms, rarely accompanied by chlorite; its dark color gives the greyish tone to this granite, or when abundant forms the *blue* granite of the Vale parish. This substance is essentially superior to mica in the formation and durability of granites for strength and resistance; consequently its

presence occasions more labor in working or facing the block, and its specific gravity is increased. The mica is inferior in quantity to the hornblende, and usually dispersed in small flakes in the mass;—it may, with chlorite, be considered rare.

2. Do air and water alternately cause any, and what symptoms of decay?

The compact nature of a close grained granite, such as the Vale and Herm stone, having the felspar highly crystalized and free from stained cracks, seems well calculated to resist the effect of air and water.—When the exterior *bruised* surface of a block has been blown off, I do not know a stone better disposed to resist decay:—if the surface blocks of the island are now examined after the lapse of ages, it will be found to have resisted the gradual disintegration of time in a superior degree, when compared with *large grained* or *porphyritic* granite; when exposed to water and air there is no change beyond the polish resulting from *friction* of the elements. Among the symptoms of decay, disintegration prevails generally among granites, usually commencing with the decomposition of the mica; its exfoliating deranges the cohesion of the grains, and it may be considered then to be the more frequent mode of decay. Desquamation is rare with the well defined granites of Guernsey and Herm, and in buildings I know no instance of its existence.

3. What the greatest age of building, or experience of the above?

The churches of the Vale and St. Sampson, although much of the materials are French and Alderney, bear many proofs of the remarks made in the last answer; these erections date A. D. 1100—1150. The ancient buildings of decided Herm and Vale stone must be sought for among the old houses in the northern parishes, where they not only encounter the effect of air and water (rain,) but the sea air and burning rays of the sun. Disintegration alone appears going on by slow degrees, but in no case affecting the interior of the stone, and so gradual and general as not to deface the building materially; indeed, the oldest proofs taken from door-posts, lintels, and arches, have scarcely lost their original sharpness or sculpture. The pier of St. Peter's Port and bridge of St. Sampson's may also be mentioned.

The shore rocks in like manner do not show any material change of surface by

wearing; where the force of the tide is strongest, a slight smoothness alone may be observed on the exterior particles, and in many instances each substance possesses this polish *without being levelled down to a face*.

Vale stone on the northern point of Guernsey produces a finer grained sienite than Herm, more hornblende in it, and specific gravity greater. The Herm is somewhat larger grained, but equally good for every erection where durability is the chief point. The *Cat-auroque* stone in the western part of Guernsey must be considered of a different structure to the above: it is a fair and good stone and appears to last well; its schistose texture must ally it to the gneiss series, and I do not know its counterpart in Britain. In color it is much the same as the blue granites, the felspar is brilliant and the hornblende prisms are well defined; there is more chlorite in it and it is easier to work.

TABLE SHOWING THE RESULT OF EXPERIMENTS MADE UNDER THE DIRECTION OF MR. WALKER, ON THE WEAR OF DIFFERENT STONES IN THE TRAMWAY ON THE COMMERCIAL ROAD, LONDON, FROM 27TH MARCH, 1830, TO 24TH AUGUST, 1831, BEING A PERIOD OF SEVENTEEN MONTHS.

Name of stone.	Sup. area in ft	Original weight	Loss of weight by wear.	Loss per sup. foot.	Relative losses.
		cwtqrs.lbs	lbs.	lbs.	
Guernsey	4.734	7 1 12.75	4.50	0.951	1.000
Herm	5.250	7 3 24.25	5.50	1.048	1.102
Budle	6.336	9 0 15.75	7.75	1.223	1.286
Peterhead (blue)	3.484	4 1 7.50	6.25	1.795	1.887
Heytor.	4.313	6 0 15.25	8.25	1.915	2.014
Aberdeen (red)	5.375	7 2 11.50	11.50	2.139	2.249
Dartmoor	4.500	6 2 25.00	12.50	2.778	2.921
Aberdeen (blue)	4.823	6 2 16.00	14.75	3.058	3.216

The Commercial Road stoneway, on which these experiments were made, consists of two parallel lines of rectangular tramstones, 18 inches wide by a foot deep, and jointed to each other endwise, for the wheels to travel on, with a common street pavement between for the horses. The tramstones subjected to experiment were laid in the gateway of the Limehouse turnpike, so as of necessity to be exposed to all the heavy traffic *from* the East and West India Docks. A similar set of experiments had previously been made in the same place, but for a shorter period, (little more than four months,) with however not very different results, as the following figures corresponding with the column of "*relative losses*" in the foregoing table will show.

Guernsey	1.000	Peterhead (blue)	1.7.5
Budle	1.040	Aberdeen (red)	2.413
Herm	1.156	Aberdeen (blue)	2.821

All the above stones are granites except the Budle, which is a species of whin from Northumberland, and they were all new pieces in each series of experiments.

#### EXPERIMENTS MADE WITH MESSRS. JOSEPH BRAHAM AND SONS' HYDRO-MECHANICAL PRESS ON VARIOUS SPECIMENS OF STONE.

The following experiments were made with a 12 inch press, the pump one inch diameter, and the lever 10 to 1;—the mechanical advantage therefore  $144 \times 10 = 1440$  to 1. The weights on the lever were added by 7 lbs. at a time;—each addition therefore equivalent to  $1440 \times 7 = 10,080$  lbs or  $4\frac{1}{2}$  tons.

In consequence of the smallness of the specimens, the press was filled with blocks to the required height, and with these the surplus effect of the lever was  $4\frac{1}{2}$  lbs. at 10 to 1, which strictly should be added to the pressure, but as the friction of the apparatus is equal to the effect of the lever, it is dispensed with in the calculation.

The column containing the pressure per square inch required to produce a fracture, gives the true value of the stone, as the weight that does so would possibly completely destroy the stone if allowed to remain on for a length of time. It should also be observed, that from the exceedingly short time allowed for the experiments, the results are probably too high.

DESCRIPTION OF STONE.	Weight of each specimen. lbs. or.	Dimensions. Lineal inches.	Surface exposed to pressure Specimen. Sup. Ins.	Pressure required to fracture stone.		Pressure required to crush stone.	
				Total to each specimen.	Per sup. inch of surface.	Total to each specimen.	Per sup. inch of surface.
				Tons.	Tons.	Tons.	Tons.
Herm.....	6	4 × 4 × 4	16	80.0	5.00	116.0	7.25
Aberdeen (blue).	6	4 × 4 × 4	16	72.5	4.53	96.4	6.03
Heytor.....	5	4 × 4½ × 3	17	81.0	4.76	85.5	5.03
	5	4 × 4½ × 3	18	63.0	3.50	76.5	4.25
Heytor.....	4	4 × 4 × 3	16	67.5	4.22	103.5	6.47
	4	4 × 4 × 3	16	58.5	3.66	94.5	5.91
Dartmoor.....	4	4 × 4 × 3	16	67.5	4.22	103.5	6.47
	4	4 × 4 × 3	16	45.0	2.81	72.0	4.50
Peterhead (red).	5	4½ × 4 × 3½	18	58.5	3.25	94.5	5.25
Peterhead (blue-grey).....	4	4½ × 4 × 3	18	45.0	2.50	81.0	4.50
Penryn.....	5	4½ × 4½ × 3½	18.6	58.5	3.14	85.5	4.60
	5	4½ × 4½ × 3½	17.5	45.0	2.57	72.0	4.11
	5	4½ × 4 × 3	18.5	63.0	3.41	72.0	3.90
	5	4½ × 4 × 3½	18	31.5	1.75	54.0	3.00
Ravaccioni.....	5	4½ × 4 × 3½	18	78.5	4.35	83.0	4.61
	5	4½ × 4 × 3	18	49.5	2.75	72.0	4.00
Veined.....	5	4½ × 4 × 3	18	45.0	2.50	85.5	4.75
	5	4½ × 4 × 3	18	31.5	1.75	63.0	3.50
Yorkshire (Cromwell bottom)...	12	5½ × 5 × 5½	27.5	81.0	2.95	121.5	4.42
	12	5 × 5 × 5½	27.5	76.5	2.78	95.5	3.47
Craighleith.....	11	5 × 5 × 5½	25	63.0	2.52	85.5	3.42
	11	5 × 6 × 5	55	31.5	1.26	63.0	2.52
Humbie.....	17	6 × 6 × 6	36	72.0	2.00	81.0	2.25
	17	6 × 6 × 6	36	49.5	1.37	67.5	1.87
Whitby.....	16	6 × 6 × 6	36	36.0	1.00	40.5	1.12
	15	6 × 6 × 6	36	36.0	1.00	36.0	1.00
Valentia slate* (laminæ vertical)	.....	3 × 3 × 3	9	30.4	3.38	47.6	5.29

\* A few experiments were also made with inch cubes of this slate, placed on their natural beds, the results of which were 5.44 and 5.88 tons respectively, or, on the average, 5.14 tons per square inch of exposed surface, to crush the stone. A trial on a similar small cube with the laminæ vertical, gave 5.98 tons as the corresponding result. The specific gravity of Valentia slate appears to coincide very nearly with that given by Kirwam for Welsh slate.

**FALL OF FISHES FROM THE ATMOSPHERE IN INDIA; BY M. PRINSEP.**—The fact that fishes fall from the atmosphere in the rainy season, however incredible it may appear, has been so frequently attested by creditable witnesses that it can scarcely be doubted. As for myself, my credulity is compelled to yield to the discovery I made one day of a small fish, in my pluviometer, which was situated on an isolated pile of stones about five feet high, in my garden at Benares. A note from M. Cameron informs me that a rain of fishes occurred on the 19th of February, 1830,

near Feridpoor. This fact was asserted before a magistrate, by many ocular witnesses, and it was their concurring testimony that towards noon of the above mentioned day, the sky was obscured, the rain commenced to fall, and shortly after, fishes of various sizes fell from the atmosphere. A large number were collected by several witnesses; some were found destitute of a head, and commenced to putrefy; others were entire and fresh, but no one dared to eat them.—[Bib. Universelle, No. 3, Mars, 1836.]

**FIRE BRICKS.**—Mr. Isaac Doolittle, superintendant of Iron Works at Bennington, Vermont, has, from materials found in that vicinity, manufactured fire bricks, which have stood a blast of five months, and being recently examined appeared so little worn that the furnace has again been put in blast.

This discovery appears of serious importance. We have seen specimens of the sand, which is purely siliceous—of the clay, which is of the porcelain family, and of the brick and a crucible made from these materials, all of which appear to be excellent.

In the furnaces they substitute blocks and bricks formed of these materials for fire stones in the construction of hearths, and of tymps for blast furnaces. Heretofore hearth-stones have been obtained from Stafford, Connecticut, but these materials appear preferable to either for durability and cheapness.

From the Railroad Journal.

Gentlemen,—I have read with interest the communications in your Journal, from Mr. Steere and Mr. Norris, but without any desire to take part in a controversy which must be, or has already been, settled by experimental demonstrations; and my object now, is, merely to explain what appears to have been mis-conceived by Mr. Aldrich, the author of a communication in your last Journal, in reference to the "gravity of loads upon inclined planes."

Mr. A., says, "The communications which have been published in the Journal, between Mr. Norris and Mr. A. G. Steere of N. Y. and Erie Railroad, have probably been caused by the miscalculation of the gravity of loads upon inclined planes, by Mr. Steere, he, using the rule given by Pambour, the fallacy of which is very apparent, at least it appears not to give the result we wish to find, as it would give all the gravity on an angle of  $45^\circ$  which is impossible"

"I admit that the rule given is perfectly applicable, as it respects the velocities of falling bodies upon inclinations;"—

There is nothing new or peculiar in the rule used by Pambour for calculating the resistances caused by the gravity of loads; nor in the present case is there any need of discussing the laws of falling bodies. The rule is one demonstrated in all books of

mechanics and is strictly a proposition in statics, as it may be and has repeatedly been shown, that when any power after having once been set in motion continues to draw a load up an incline with uniform velocity, the power and load are inequilibrium; and when the power is applied in a direction parallel to the surface of the plane the power and load are in the same proportion as the height and length of the plane. The correctness of this rule is almost universally admitted, it is the one used by Pambour, and does not by any means give the result stated by Mr. A., at an angle of  $45^\circ$ .

At an angle of  $45^\circ$  the length and height are as 1 to 0.7071068 or, the gravity of a ton will be little more than  $\frac{7}{10}$ ths of a ton instead of 1 ton as stated by Mr. A.

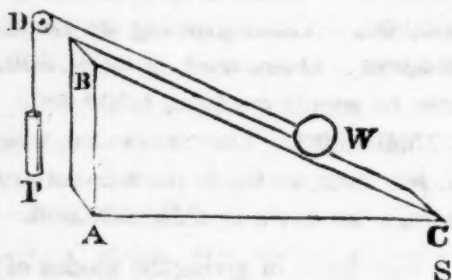
The ratio between the height and length of a plane is evidently one of equality when the plane is vertical; and it is equally evident that in such case, the ratio of the power and weight is that of equality, it being reduced to the equilibrium of two weights hanging over a pulley.

The inclinations upon Railroads are generally so slight that the horizontal and absolute lengths will not differ sufficiently to require much, if any, correction for the measurements, which are made horizontally, and from Mr. A's result of the equality between the weight and power at  $45^\circ$  it would seem that he made the proportion between the power and weight equal to that between the height and base, instead of that between the height and length.—In the only other application of the rule by Mr. A., the angle ( $4^\circ$ ) is so small, and results have so few places of decimals, that it is not clearly discernible which proportion was adopted.

How Mr. A. arrived at the results given in his table, is not shown. They do "vary very much from the result of the rule" generally adopted; and if his method is correct, the fact is important and should be established.

The proposition upon which Pambour's rule is founded is thus enunciated in Hutton's Mathematics, Volume 2, page 164; "The power gained by the inclined plane is in proportion as the length of the plane is to its height. That is, when a weight W is sustained on an inclined plane, B C, by a power P, acting in the direction D W,

parallel to the plane; then the weight  $W$ , is in proportion to the power  $P$ , as the length of the plane is to its height; that is,  $W : P :: BC : AB$ ."



From the New-York Farmer.

#### STATISTICS OF GREAT BRITAIN.

STATISTICS OF THE BRITISH EMPIRE.—A highly valuable work on this subject has been recently given to the public by James McQueen, and dedicated to the Duke of Wellington. We infer from this circumstance that its authority may be relied upon; and we believe that many of its details, especially as far as they relate to agriculture, come within the province of this work; and will be interesting and instructive to our readers. Statistical facts are always valuable; but we do not think in this country sufficiently appreciated. They alone enable us to form any thing like an exact opinion of the actual condition of a country, its actual wants, its actual capacities and improvements. They are extremely useful to the age in which they are given; and they remain as most important documents of reference to all succeeding periods. With respect to many matters of national policy and legislation, they are the only safe grounds of action; and the most serious mistakes have been made for a want of this knowledge. In many subjects of statistical detail, perfect accuracy is not attainable. Changes are perpetually occurring, and allowance for these changes, in the shape of what sailors call 'dead reckoning,' must be made. But even a tolerable approximation to the truth is infinitely better than mere vague guesses

or conjecture. The extreme difficulty and labor requisite in procuring such details can be but very imperfectly estimated by those who have made no experiments of this kind; the difficulty of superintending the press in such cases, so as to insure accuracy, is not inconsiderable; extreme candor is to be shown and the highest credit is due to those who busy themselves in this severe and humble labor; and present the results to the public eye with all the accuracy which extreme diligence and pains taking can secure. This work, though compressed into a thin octavo, could not have been executed in the manner it has been done, without application to numerous, various, difficult and distant sources of information. We shall make such few extracts from it as may be most likely to command attention.

The rents of land in England, vary from 20s. to 3l. sterling per acre. In Scotland, from 20s. to 7l. per acre. The latter very high rents are in the finely cultivated districts of Mid Lothian, and probably in the neighborhood of city markets. The average rent is put at 25s. to the acre. Rent in Ireland, on land manured for a crop, is 9l.; not manured 2l. to 3l. The average rent in Ireland is put down at 23s. per acre. Land in Ireland sold for thirty years, we should rather say leased, is calculated to yield  $3\frac{1}{2}$  per cent. Rent of sheep pasture in Scotland, is from 3s. to 6s. per acre. The wear and tear of horses is estimated at one-tenth; so that there is a complete absorption of this species of capital once in ten years. This fact, if well established, has a most important bearing upon the question of the comparative expediency of employing horses or oxen for farming purposes; the former a deteriorating, the latter when properly managed, an improving capital. This single circumstance of difference will not however by any means decide the question. Many other matters are to be taken into the account, and at present we forbear a judgment.

**HORSES.**—The whole number of horses now owned (1832) in Great Britain 1,412,797. Add for Ireland one half more 706,398. Total. Great Britain and Ireland 2,119,705. We have in a note some other details. The number of horses in the Prussian provinces was in 1825—Horses 1,202,642. Colts, 199,706. Total, 1,402,348. The number of horses in France is stated to be 2,400,000. The estimated value of riding and carriage horses in England, is 40*l.* each—of horses for agricultural purposes, 25*l.* each. Total value, £60,630,130 sterling—a considerable capital to be literally *worked up* once in ten years.

**BLACK CATTLE.**—The number of Black Cattle in the United Kingdom is estimated at 15,000,000. According to the agricultural report of 1833, the value of cows bought, is from 13*l.* to 15*l.*—and of oxen, working, 14*l.* to 16*l.*, and of those sold from 18*l.* to 20*l.* The wear and tear, or loss in cattle annually, is reckoned as in horses, about one-tenth. The absolute loss of one-tenth of black cattle, by disease or accident, so as to be worthless, excepting for their hides, as of horses, in a year, must, if so understood, be a great overstatement. The total number of cattle and calves slaughtered in London in the year 1834–5, was 177,000. The average weight of the cattle was 880 lbs. each. The number slaughtered in Liverpool, Manchester, Leeds, Sheffield and Birmingham, according to the Agricultural Report of 1821, was yearly 47,859 cattle, 668 lbs. each; and 52,448 calves at 90 lbs. each. The number killed in Ireland to procure salt-beef must be great, when it is known that reduced as that salt-beef trade is, still the quantity exported to all foreign parts was in 1825, 73,135 barrels, or 219,305 cwt., equal to at least 30,000 of the heaviest oxen alluded to. The Kyloe breed of cattle in the West Highlands are very numerous; thousands of these cattle are fed, and fattened, and slaughtered yearly in every part of Scotland and England; their

price is very high; three years old, 13 to 14 guineas each in 1816. The total number, classes, and value of black cattle, thus: Bulls, young and old, 500,000. Cows, do., 7,000,000. Oxen, &c. fattened to kill, 2,000,000. Oxen growing up for fattening, 4,000,000. Oxen, used to work, 500,000. Cattle to supply wastage, 1,400,000. Total, 15,400,000. The total value, which, at 14*l.* per head, we think must be an over-estimate, is set down at £215,600,000.

A note here, in giving the modes of keep in some places, states that in Jutland a cow yields from 64 to 84 lbs. of butter; in Holland, the same; in Zealand, less milk given to calves, 84 lbs. do. A horse has weekly 84 lbs. of straw, 56 lbs. of hay; 88 lbs. of barley or 96 lbs. of oats. A cow of middle size daily 8 lbs. of straw and 8 lbs. of hay during the 220 days she is in the stall. When fed with potatoes, must have 52 lbs. per day, but with this, less straw and hay. From seven to ten sheep consume as much as one cow during 180 days they are housed. The number of black cattle in the United States in 1827, was estimated at 14,000,000. By what means this estimate was formed, I am unable to say.

**POULTRY AND RABBITS.**—“The amount of capital vested in these two species of agricultural stock is of no mean importance; and much more considerable than is generally thought. According to the Times newspaper, Nov. 20, 1835, the consumption of poultry in London for the year was about 80,000*l.*, and rabbits 14,000*l.* On the same scale for the kingdom, the value of the former would be nearly 1,000,000*l.*, and the latter in number 168,000, and the value 84000*l.* The skin of the rabbit is very valuable, being double the value of the carcase. At Dunfries' February fair, 30,000 rabbit-skins have been sold. In Feverham, rabbits and pigeons are very numerous. In the district of Brundon, Suffolk, are 350 pigeon houses; here also 40,000 rabbits are

produced yearly. The Agricultural Committee of 1833, sets down the produce of pigs and poultry on a farm of 100 acres at 20*l.* annually; this, taking the farms wholly arable at 490,000, gives 9,800,000*l.* yearly, which sum, even on this scale, must be more than doubled, for the poultry, &c., raised by sheep farmers, and all other classes, who keep poultry; also it must be taken into the account that the above produce, at 20*l.*, is exclusive of the value consumed on the farms, &c., which, say one-fourth, would give for pigs and poultry, a consumption annually of about 25,000,000*l.*, leaving for poultry about 2,500,000*l.*; and admitting that stock is in the proportion of four-fifths to the produce, we have a capital of 9,000,000*l.* or 10,000,000*l.* invested in poultry, rabbits, &c., which, great as it is, is probably very near the truth. When we look at the immense number of eggs, brought from Ireland (50 tons of eggs and 10 tons of live and dead poultry being shipped from Dublin alone in one day) and 66,000,000 eggs, imported from France for London alone; and this immense number, a trifle certainly to what are produced in this country, we shall cease to wonder at the large capital here stated to be invested in poultry of all kinds. The quantity of eggs imported into Liverpool from Ireland in 1832 was 4097 crates, value 81,940*l.*, which at 6*d.* per dozen, gives 3,777,600 dozens, and the number 39,331,200. The number imported into Glasgow from Ireland, in 1835, by the Custom-House entries, was 19,321 cwts.; at nine to a pound gives 17,459,568. In 1833, the import has increased to 7,857 crates, or upwards of 70,000,000." Of sheep and swine, we shall give further details on a future occasion.

PRODUCE OF ONE SEED.—Extract from proceedings at a late meeting of the Northamptonshire Farming Society in England:

Mr. Hillyard then produced his bag of turnip seed, for which a great scramble took place amidst much laughter. He observed

that one of the advantages of these turnips was, that they would not run to top, if allowed to stand till late in the year. He had seen turnips in April run to top until they resembled a painter's brush. As an evidence that they were well worth attending to, he would mention that some time ago, he was walking over a turnip field in a distant county, when he perceived that the turnips were exactly the same sort as those he was now showing. Upon mentioning the fact to the owner, he confirmed it, adding that his son had obtained *one of the seeds* handed round by him after the dinner of the society; that he had sown it; and liked it so much that he preserved the produce; and had now his farm stocked from that insignificant origin.—[B. Farmer's Magazine, Oct., 1836.]

DEATH OF REV. HENRY BERRY.—By a late number of the British Farmer's Magazine, we have the painful annunciation of the death of the Rev. Henry Berry, for some time the editor of that useful publication.—He died on the 24th August last. He was eminently distinguished as a scientific and practical farmer; for the zealous aid which he was always ready to lend to the farming interests; and particularly for his able defence of, and his long and distinguished success in improving the breed of improved Durham Short Horns. The death of such a friend of agriculture is a serious public loss.

H. C.

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### Items.

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Prejudice and conceit are the offsprings of ignorance, and the great barrier to agricultural improvement. An African prince threatened to take the life of a traveller, because he dared to assure him, that water became solid by freezing, in his country. Because he had not seen it, the prince deemed the traveller an impostor and a liar. A few years ago, the growth of a hundred bushels of corn on an acre was considered

a fabulous tale by the mass of the farmers. They had not seen such a product, and they therefore did not believe in it. But such a product is now of so common occurrence, that few doubt its reality. Tell these men that they can double the products of their farms, by economizing and judiciously applying their manure;—that they can quadruple it, by this, by under-draining, by alternating crops, and by root culture—and they are as incredulous as the African prince, because they are ignorant of those natural laws which ever have governed the material world, and which ever will govern it. The savage laughs at and rejects the art of civilized life, for the same reason that the ignorant or indolent farmer scorns the idea of improving the condition of society by agricultural societies, agricultural schools and legislative bounties for agricultural improvement.—They either do not know enough of natural science, to comprehend its utility in the ordinary business of life, or they are governed by a sordid, selfish, illiberal policy, which, could it be carried out, would shut out every ray of light, and smother every sentiment of patriotism, which should either thwart their views, or which would tend to elevate their fellows above their own limited standard in society. Some men seem to have an idea, that they are balanced in a scale; that as others can be made to sink, in the same proportion they shall rise, and vice versa. The first requisite to improvement, in any business, is the conviction, that we *can* learn; the next, that we *will* learn. And it perhaps is invariably true, that the more we *do* learn in useful knowledge, the more we become sensible of our comparative ignorance, and the more we are anxious to learn. This results not only from a wish to serve ourselves, and multiply our enjoyments, but from a sense of sacred duty to society.

Our national motto once was, "*millions for defence, but not a cent for tribute.*" A correspondent suggests the following parody, as suited to the action of the legislature upon the surplus fund:—" *Millions for the professions, but not a cent for the arts of productive labor.*"

If it is true, as is alleged, that some farmers in our legislature, are averse to giving any public monies to aid agricultural improvement, we do not hesitate to

say the sentiment is unworthy of them; and that enlightened men will be apt to charge them with either ignorance or jealousy—ignorance of the value of rural improvement, and of their duty—or jealousy lest others may be enabled to surpass them—and their own profits and popularity be consequently lessened.

**THE CONTRAST.**—Massachusetts gives nothing from her public treasury to sustain her common schools, but she gives bountifully from her public treasury to sustain and encourage her agricultural societies, and is now about making an *agricultural* survey of her territory. Her schools are surpassed by none in the Union. New-York has given millions to her colleges, and millions to her common schools; but she clenches her purse with a convulsive gripe when she is asked to aid and encourage agricultural societies. If it is true, that wisdom lies between two extremes, these States might learn from each other.

**FARMING IMPLEMENTS.**—The State Agricultural Society have appointed a board of examiners, comprising men of science, and practical machinists and farmers, to meet semi-annually, to examine, and thoroughly to test (and to give certificates of merit,) all farm implements and machinery which may be offered for their inspection. We are glad to learn, that the gentlemen designated will attend to the duties of their appointment, and that notice will shortly be given of the time and place of their first meeting. This measure, if properly carried out, and we feel confident that it will be, cannot fail of producing a highly salutary influence upon our agriculture, and upon the general interest of the State. It will give general confidence in implements and machines which are truly meritorious, and to multiply them upon our farms; while on the other hand, it will tend to prevent imposture, and to save great expenditures for inventions which are comparatively worthless.

**BROOKS' SILK SPINNER AND TWISTER,** deserves a further notice from our hands, because we think it ranks among the most useful improvements of the day, and is calculated greatly to facilitate our progress in the silk business. Let it be remembered, that very little instruction is required to qualify a woman to use it; that it is equal-

ly adapted to the fabrication of sewing silk, twist, or to a thread for any required fabric, and that it produces all these, as far as we can judge, in a perfect manner. Now the question is, what will it earn, in a silk family, or a silk neighborhood? For now-a-days, *profit* is the great desideratum. In this matter, we shall speak on the authority of the patentee, a very unassuming, intelligent, and, we believe, honest member of the society of Friends, or Quakers. He says it is a moderate day's work to spin and twist half a bushel of cocoons into sewing silk, and that the fair average product of these cocoons would be 175 skeins of sewing silk, worth now, at wholesale price five cents the skein. The highest price of cocoons is \$4 per bushel. Assuming these data, and basing our calculation upon five bushels of cocoons, which a family of girls may easily produce every year, let us see what would be the gain which would accrue to this family in five years, from the use of this machine.

The 25 bushels of cocoons would produce 8,750 skeins silk, worth five cents at wholesale,	\$437 50
From which deduct the wages of a woman, 50 days, at 50 cents,	\$25 00
Add cost of machine,	35 00
And it makes a total of	60 00
And leaves a profit of	\$377 50
The highest price at which cocoons sell is \$4 which would be for the 25 bushels,	100 00
	\$277 50

Which shows a profit, in buying and using this machine, over selling the cocoons, in the small quantity of 25 bushels, of \$277 50. This would require the labor of a woman only ten days in a year, or fifty days in the five years. The remainder of the time, to any extent required, might be as profitably applied, in working up the cocoons of the neighborhood, of the town, or of the county; and the value of the machine would be yet but little impaired by these earnings! Every silk district should have one of Brooks' machines.

#### IMPORTANT REQUISITES IN A WIFE.

A knowledge of domestic duties is beyond all price to a woman. Every one of

our sex ought to know how to sew, and knit, and mend, and cook, and superintend a household. In every situation of life, high or low, this sort of knowledge is of great advantage. There is no necessity that the gaining of such information should interfere with intellectual acquirement, or even elegant accomplishment. A well regulated mind can find time to attend to all. When a girl is nine or ten years old, she should be accustomed to take some regular share in household duties, and to feel responsible for the manner in which her part is performed; such as her own mending, washing the cups and putting them in place, cleaning silver, or dusting and arranging the parlor. This should not be done occasionally, and neglected when ever she finds it convenient—she should consider it her department.—When older than twelve, girls should begin to take turns in superintending the household—making puddings, pies, cakes, &c. To learn effectually—they should actually do these things themselves, and stand by, and see others do them.—[Mrs. Child.]

#### A HEALTHFUL RECREATION.

Among the pleasant employments which seem peculiarly congenial to our sex, the culture of flowers stands conspicuous. The general superintendence of a garden has been repeatedly found favorable to health, by leading to frequent exercise in the open air, and that communing with nature which is equally refreshing to the heart. It was laboring with her own hands in her garden, that the mother of Washington was found by the youthful Marquis La Fayette, when he sought her blessing as he was about to commit himself to the ocean, and return to his native clime. The tending of flowers has ever appeared to me a fitting care for the young and beautiful. They then dwell as it were, among their own emblems, and many a voice of wisdom breathes on the ear from those brief blossoms, to which they apportion the dew and the sun-beam.—[Mrs. Sigourney]

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